



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/806,160

03/23/2004

Hirotsuna Miura

119210

2178

25944 7590 06/25/2008

OLIFF & BERRIDGE, PLC  
P.O. BOX 320850  
ALEXANDRIA, VA 22320-4850

EXAMINER

RUTHKOSKY, MARK

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

06/25/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/806,160	<b>Applicant(s)</b> MIURA ET AL.	
	<b>Examiner</b> Mark Ruthkosky	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 3-6,9 and 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1,2,7 and 8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/28/2008 has been entered.

### ***Claim Rejections - 35 USC § 102/103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 7-8 are rejected under 35 U.S.C. 102(b) and 102(e) as being anticipated by, or in the alternative under 35 U.S.C. 103(a) as being unpatentable over Yasumoto et al. (WO 02/073721, US 2003/0087145 and US 6,991,870.) For purposes of examination, the elements taught in the reference will be referred to in the US patent.

Yasumoto et al. teaches a fuel cell comprising a first substrate provided with a gas flow path, to supply a first reaction gas; a first electron collection layer formed on the first substrate; a gas diffusion layer formed on the first electron collection layer; a first reaction layer formed on the first electron collection layer; an electrolyte film formed on the first reaction layer; a second reaction layer formed on the electrolyte film; a gas diffusion layer formed on a second electron reaction layer, a second electron collection layer formed on the; and a second substrate provided with a second gas flow path to supply a second reaction gas (see figures 4, 5 10, and 11 and the corresponding text; see col. 7, lines 20-55.) The diffusion layer of the electrode includes two different layers. The first is a carbon layer that collects electrons and is adjacent to the separator plate. The second is also a diffusion layer adjacent to the reaction layer. At least one of the first electron collection layer and the second electron collection layer constructed in porous form by stacking conductive material particles (see figures 5, 7, and 10). The collection layer includes a plurality of rows, with the conductive material particles in each row separated by gaps (see figures 5, 7, and 10). A conductive material particle in one row is in contact with conductive material particles in an adjacent row. The conductive material may be carbon or a metal. In the collection layer, cavities formed mainly between conductive carbon particles function as pores. Smaller conductive particles fall into the pores between larger particles of the diffusion layer. The area of the pores may be varied by changing the relative proportion of particles (col. 9, lines

Art Unit: 1795

1-10 and 35-end.) Figures 5, 7, and 9 show conductive carbon fibers that form pores in the layer. The carbon particles are in contact with conductive material particles in an adjacent row. Figure 10 shows rows of conductive material particles. Some particles in one row are in contact with conductive material particles in an adjacent row. Some particles are separated by gaps. With regard to claims 7-8, fuel cell powered vehicles are known in the art (see col. 1, lines 10-15), as taught in Yasumoto et al. As the reference teaches all of the elements of the claims, the claims are anticipated.

The reference does not teach that all particles are touching, however, as noted; the area of the pores may be varied by changing the relative proportion of particles (col. 9, lines 1-10 and 35-end.) Thus, adding more particles to the mixture will force the particles adjacent to one another to touch. It would have been obvious to one of ordinary skill in the art at the time the invention was made to alter the amount of particles in the conductive layer in order to increase the conductivity or porosity of the layer. By adding more conductive particles, the conductivity of the layer will increase and the porosity will decrease. By adding relatively less conductive particles, the porosity of the layer will increase and the conductivity will decrease. One skilled in the art would add the desired amount of particles in order to achieve the desired result. The artisan would have found the claimed invention to be obvious in light of the teachings of the references.

### ***Response to Arguments***

Applicant's arguments with respect to the claims have been considered. Applicant argues that claim 1, as amended, recites "a first gas diffusion layer formed on the first electron

collection layer" and "a second gas diffusion layer formed on the second reaction layer."

Applicant argues that Yasumoto does not disclose or suggest both a gas diffusion layer and an electron collection layer. As such, Yasumoto does not disclose every feature of claim 1.

This argument is not persuasive. The electrode assembly of Yasumoto includes a layered structure having a substrate provided with a gas flow path, an carbon electron collection layer formed on the first substrate, and a the conductive polymer layers also serves as a gas diffusion layer formed on the porous carbon electron collection layer. The catalyst reaction layer formed on the first electron collection layer (col. 9, lines 1-30.) Each assembly surrounds an electrolyte film. Thus, the reference does teach "a first gas diffusion layer formed on the first electron collection layer" and "a second gas diffusion layer formed on the second reaction layer."

### ***Examiner Correspondence***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Ruthkosky whose telephone number is 571-272-1291. The examiner can normally be reached on FLEX schedule (generally, Monday-Thursday from 9:00-6:30.) If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

Art Unit: 1795

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free.)

/Mark Ruthkosky/

Primary Examiner, Art Unit 1795